

CLAIMS

- 1. A method for non-covalently connecting nanomorphic carbon species to a nucleic acid, said method comprising the steps of:**
providing a strand of said nucleic acid;
functionalizing said nucleic acid strand with a first biomolecule;
reacting said functionalized nucleic acid with a second biomolecule to form a nucleic acid complex;
coupling said nanomorphic carbon species to said nucleic acid complex.
- 2. A method as claimed in claim 1, wherein said nucleic acid is DNA.**
- 3. A method as claimed in claim 1 or 2, wherein said first biomolecule and said second biomolecule comprise a molecular receptor-ligand pair.**
- 4. A method as claimed in claim 3, wherein said molecular receptor-ligand pair comprises digoxigenin-antidigoxigenin.**
- 5. A method as claimed in any preceding claim, wherein said first biomolecule comprises biotin, said second biomolecule comprises streptavidin and said nanomorphic carbon species comprises a carbon nanotube.**
- 6. A method as claimed in any preceding claim, wherein said second biomolecule comprises an at least partially hydrophobic moiety.**
- 7. A method as claimed in any preceding claim, wherein said functionalization of said nucleic acid strand occurs at a substantially terminal portion of said nucleic acid strand.**

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8. A method as claimed in any preceding claim, wherein said functionalization of said nucleic acid strand occurs at at least one intermediate portion of said nucleic acid strand.
9. A method as claimed in any preceding claim, wherein said coupling of said nanomorphous carbon species to said nucleic acid strand occurs at a location substantially along the sidewall of said nanomorphous carbon species.
10. A material produced by a process including non-covalently connecting said nanomorphous carbon species to a nucleic acid by a method as claimed in any preceding claim.
11. A process for producing a material comprising depositing and/or orienting a plurality of carbon nanotubes with respect to a surface, said method comprising the steps of:
providing said plurality of carbon nanotubes;
providing at least a plurality of DNA strands;
functionalizing said DNA strands with at least a plurality of first biomolecules;
reacting said functionalized DNA with at least a plurality of second biomolecules to form a plurality of DNA complexes;
coupling said carbon nanotubes to said DNA complexes.
12. A process as claimed in claim 11, further comprising the step of using the sequence recognition properties of said DNA to selectively deposit said carbon nanotubes with respect to said surface.
13. A process as claimed in claim 11 or 12, further comprising the step of using the sequence recognition properties of said DNA to selectively orient said carbon nanotubes with respect to said surface.

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14. A process as claimed in any of claims 11 to 13, further comprising the step of using the sequence recognition properties of said DNA to build a molecular circuit pathway comprising said carbon nanotubes.

15. A process as claimed in any of claims 11 to 14, further comprising the step of selectively metallizing said DNA to form electrical contacts.

16. A material comprising nanomorphic carbon deposited and/or oriented by a process including non-covalently connecting said nanomorphic carbon species to a nucleic acid by a method as claimed in any preceding claim.